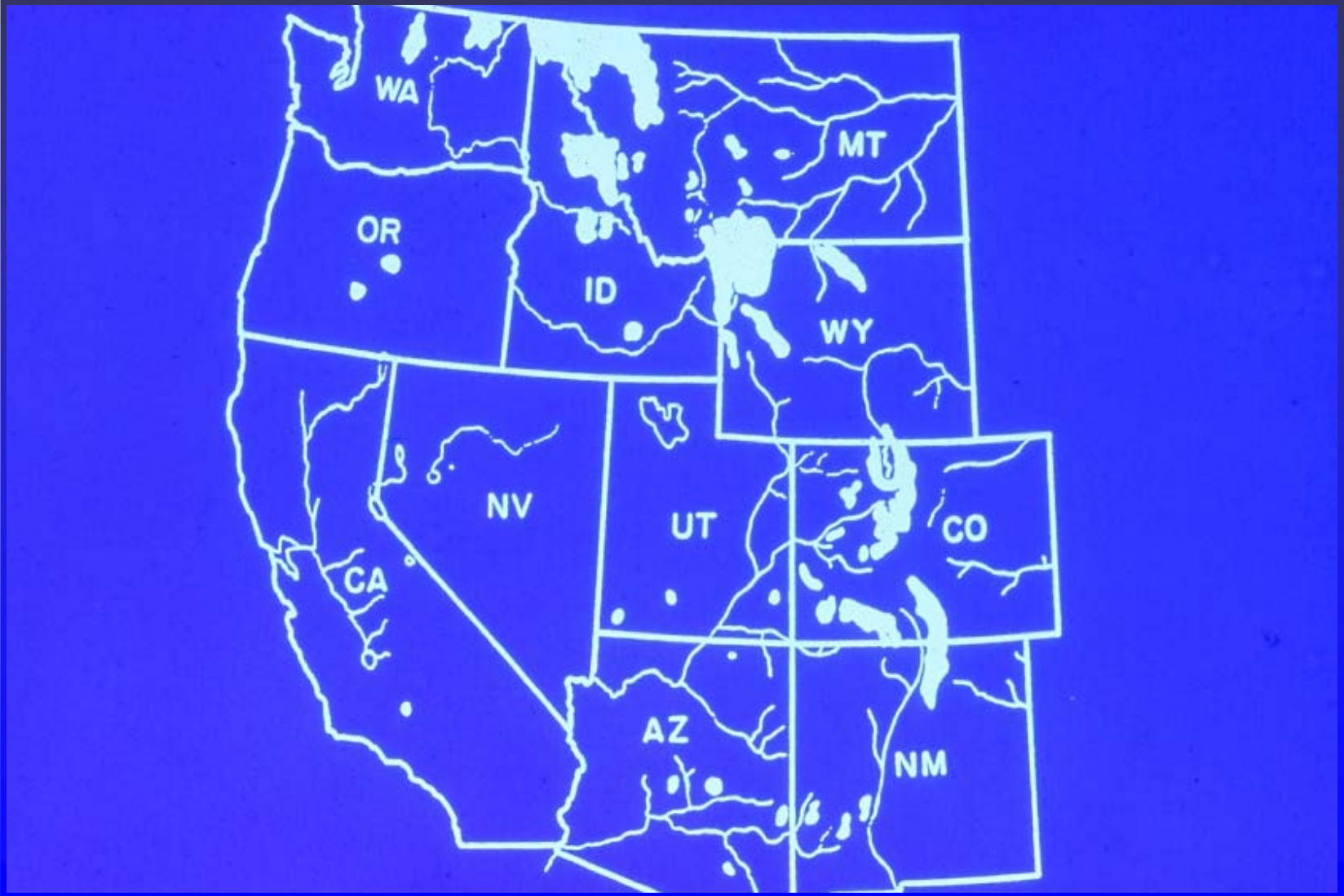
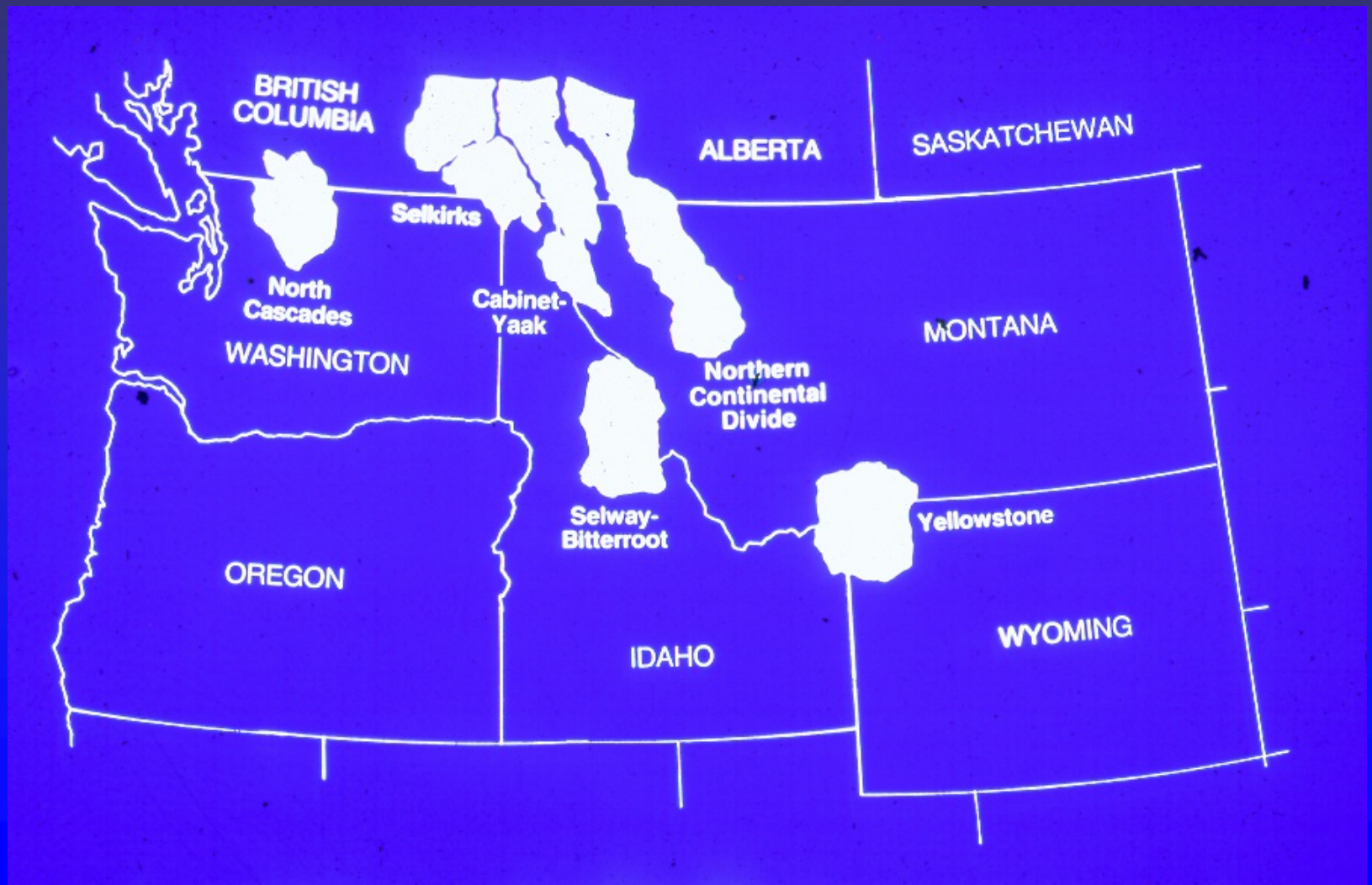
Recovery of US Grizzlies
How are we doing?

US Grizzly Range in 1922



The 6 Recovery Zones in 1975 when the US grizzly was listed



Basic elements of the US grizzly recovery program

- A recovery plan that recognizes that we needed to change the way we did things on habitat and population management
- High level political commitment and support to implement conservation action
- Cooperation among agencies for a long-term effort (we've been at it for 30 years!)
- Depth to our political support so when difficult decisions had to be made, they were made rather than avoided or changed (i.e. road management)

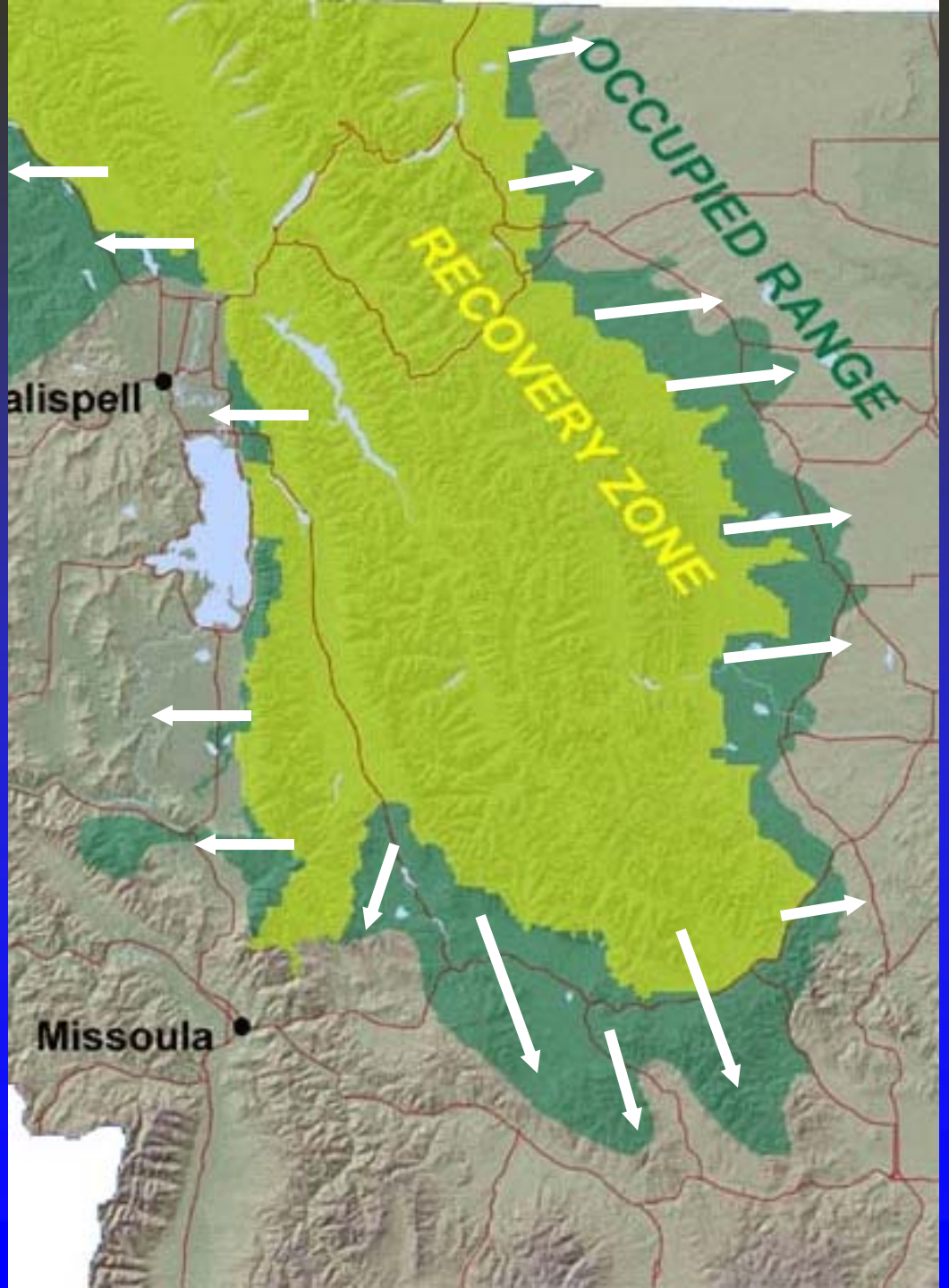
What are the basic ways we recover grizzly bear populations?

- We work together to successfully implement simultaneous conservation efforts:
  - Reduce mortality
  - Re-link populations and habitat units
  - Provide habitat security in key habitats through access management and sanitation
  - Build public support and understanding for bears so the public is part of the solution rather than an adversary to solutions

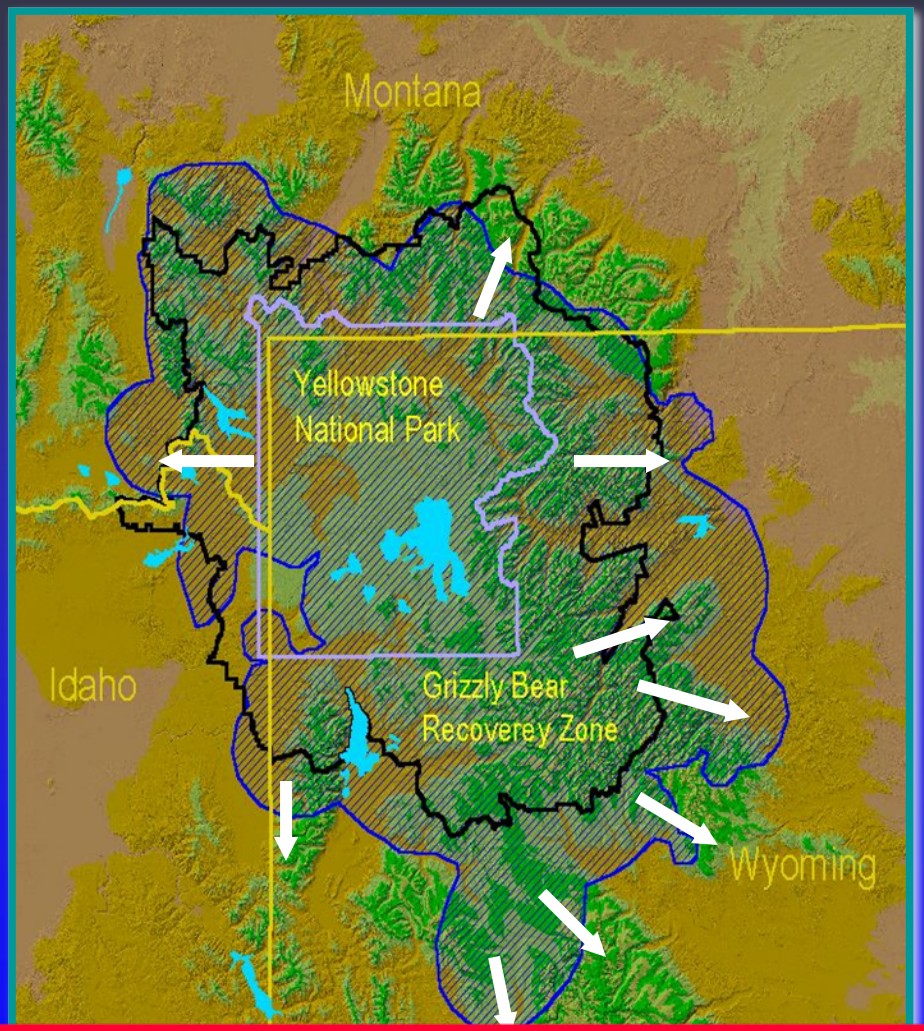
Human activities are reducing the **resiliency** of wildlife populations to respond to threats. We need to increase their resiliency if they are to recover. This involves both habitat and mortality management.

We often deal with publics who are increasingly detached from the impacts of their actions on wildlife and wildlife habitat. **Leadership is desperately needed to work with the public and political leaders so they understand the ecosystem impacts of development actions** and how these can be made more compatible with wildlife.

The NCDE population is over 900 bears and is expanding at 2-3%/year



The Yellowstone population is expanding at 4%-7%/yr and is 600+ bears.



Black line is recovery zone

Blue line is current range as of 2003

Arrows show key areas of expansion

But it wasn't always this way…

Why listing under ESA in 1975?

- Low numbers of bears. There were perhaps 180-220 in the Yellowstone ecosystem and perhaps 250 in the NCDE ecosystem.

- High number of deaths during garbage phase out in Yellowstone– 40-50 per year in early 1970s.

Why listing under ESA in 1975?

- Stated reasons the grizzly bear was listed in 1975:
  - Overall reduction in range
  - Livestock grazing, timbering, and road and trial construction in grizzly habitat
  - Indiscriminate illegal killing, excessive control actions related to livestock, and sport hunting that altogether results in unsustainable mortality
  - Possible impacts of isolation of populations from each other
  - Rapid closing of garbage dumps in Yellowstone resulting in "dispersal of bears out of the Park"

A key reason for our recovery success:

THE INTERAGENCY GRIZZLY BEAR COMMITTEE (IGBC)

INTERAGENCY COOPERATION FOR THOSE WITH A MULTITUDE OF MANDATES

The IGBC

Created in 1984 by an MOU signed by the 2 Assistant Secretaries of Interior and Agriculture

and

the 4 Governors of the states of Wyoming, Montana, Idaho, and Washington

It directs state and federal agencies to cooperatively implement the Grizzly Bear Recovery Plan and "provide for the recovery of the grizzly bear"

Overall IGBC objectives

- Implement the tasks in the Grizzly Bear Recovery Plan
- Conserve and recover the grizzly bear in 4 US states and adjacent areas of Canada where it still exists
- Work together to achieve this goal under a cooperative approach emphasizing habitat and mortality management
- Enhance communication and cooperation toward this mutual goal

IGBC Subcommittees

IGBC

IGBC Advisors
Servheen, Summerfield Schwartz

IGBC Executive Assistant
Ellen Davis

- **Yellowstone Subcommittee**
- **I & E Subcommittee**
- **NCDE Subcommittee**
- **Bitterroot Subcommittee**
- **Cabinet/Yaak and Selkirk Subcommittee**
- **North Cascades Subcommittee**

Why did the IGBC make a difference?

- It committed agencies to a common objective by signatures of high-level officials
- It provided an accountability link between the decision-makers in the agencies and the field level implementation of the Recovery Plan
- It provided structure for interagency cooperation

So, what happened to allow populations to grow and recover?

- Mortality control was implemented particularly related to bear-human conflicts involving garbage and livestock
  - Mortalities were dramatically reduced from the period when dumps were open and the huge mortality numbers immediately after dump closures

So, what happened to allow this population to grow and recover?

- Mortality control was implemented particularly related to bear-human conflicts involving garbage and livestock
  - State management began to limit mortality
  - For example, in Wyoming prior to 1968 there were no restrictions nor reporting requirements on killing of grizzly bears

So, what happened to allow this population to grow and recover?

- Habitat management was implemented to increase habitat security and secure attractants
  - Road closures began (1600+ km closed to date in the Yellowstone area alone, overall more than 4000 km closed)

So, what happened to allow this population to grow and recover?

- Habitat management was implemented to increase habitat security and secure attractants
  - Garbage dumps were closed or secured so that bears no longer had access to human garbage

So, what happened to allow this population to grow and recover?

- Habitat management was implemented to increase habitat security and secure attractants
  - Campground garbage secured (for example, many USFS campgrounds used to have open dumpsters in them with bears in these dumpsters at night)

So, what happened to allow this population to grow and recover?

- Habitat management was implemented to increase habitat security and secure attractants
  - Backcountry sanitation was enhanced (the Parks has always been relatively good on backcountry sanitation but the USFS was in need of a major effort to improve sanitation in backcountry areas. Thus, the backcountry food storage order.)

So, what happened to allow this population to grow and recover?

- Habitat management was implemented to increase habitat security and secure attractants
  - Outreach began to create partnerships with backcountry users and residents (for example outfitter organizations became partners in promotion of proper backcountry attractant storage and towns and counties passed ordinances concerning garbage and attractant storage)

Science and monitoring was intensively applied to grizzly populations

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Assessment of pesticide residues in army cutworm moths (*Euxoa auxiliaris*) from the Greater Yellowstone Ecosystem and their potential consequences to foraging grizzly bears (*Ursus arctos horribilis*)

Hillary L. Robison [a], Charles C. Schwartz [b,*], Jim D. Petty [c], Peter F. Brussard [a]

[a] *Program in Ecology, Evolution and Conservation Biology/314, University of Nevada, Reno, NV 89557, USA*
[b] *Interagency Grizzly Bear Study Team, US Geological Survey, Northern Rocky Mountain Science Center, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717, USA*
[c] *US Geological Survey, 82 McReynolds Hall, Columbia, MO 65211, USA*

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Available online 17 February 2006

Science and monitoring was intensively applied to grizzly populations

Use of sulfur and nitrogen stable isotopes to determine the importance of whitebark pine nuts to Yellowstone grizzly bears

Laura A. Felicetti, Charles C. Schwartz, Robert O. Rye, Mark A. Haroldson, Kerry A. Gunther, Donald L. Phillips, and Charles T. Robbins

Abstract: Whitebark pine (*Pinus albicaulis*) is a masting species that produces relatively large, fat- and protein-rich nuts that are consumed by grizzly bears (*Ursus arctos horribilis*). Trees produce abundant nut crops in some years and poor crops in other years. Grizzly bear survival in the Greater Yellowstone Ecosystem is strongly linked to variation in pine-nut availability. Because whitebark pine trees are infected with blister rust (*Cronartium ribicola*), an exotic fungus that has killed the species throughout much of its range in the northern Rocky Mountains, we used stable isotopes to quantify the importance of this food resource to Yellowstone grizzly bears while healthy populations of the trees still exist. Whitebark pine nuts have a sulfur-isotope signature (9.2 ± 1.3‰ (mean ± 1 SD)) that is distinctly different from those of all other grizzly bear foods (ranging from 1.9 ± 1.7‰ for all other plants to 3.1 ± 2.6‰ for ungulates). Feeding trials with captive grizzly bears were used to develop relationships between dietary sulfur-, carbon-, and nitrogen-isotope signatures and those of bear plasma. The sulfur and nitrogen relationships were used to estimate the importance of pine nuts to free-ranging grizzly bears from blood and hair samples collected between 1994 and 2001. During years of poor pine-nut availability, 72% of the bears made minimal use of pine nuts. During years of abundant cone avail-

Science and monitoring was intensively applied to grizzly populations

Temporal, Spatial, and Environmental Influences on the Demographics of Grizzly Bears in the Greater Yellowstone Ecosystem

CHARLES C. SCHWARTZ,[1] *U.S. Geological Survey, Northern Rocky Mountain Science Center, Interagency Grizzly Bear Study Team, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717, USA*

MARK A. HAROLDSON, *U.S. Geological Survey, Northern Rocky Mountain Science Center, Interagency Grizzly Bear Study Team, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717, USA*

GARY C. WHITE, *Department of Fishery and Wildlife Biology, Colorado State University, Fort Collins, CO 80523, USA*

RICHARD B. HARRIS, *Wildlife Biology Program, College of Forestry and Conservation, University of Montana, Missoula, MT 59812, USA*

STEVE CHERRY, *Department of Mathematical Sciences, Montana State University, Bozeman, MT 59717, USA*

KIM A. KEATING, *U.S. Geological Survey, Northern Rocky Mountain Science Center, Forestry Sciences Lab, Montana State University, Bozeman, MT 59717, USA*

DAVE MOODY, *Trophy Game Section, Wyoming Game and Fish Department, 260 Buena Vista, Lander, WY 82520, USA*

CHRISTOPHER SERVHEEN, *U.S. Fish and Wildlife Service, University of Montana, Missoula, MT 59812, USA*

ABSTRACT

During the past 2 decades, the grizzly bear (*Ursus arctos*) population in the Greater Yellowstone Ecosystem (GYE) has increased in numbers and expanded in range. Understanding temporal, environmental, and spatial variables responsible for this change is useful in evaluating what likely influenced grizzly bear demographics in the GYE and where future management efforts might benefit conservation and management. We used recent data from radio-marked bears to estimate reproduction (1983–2002) and survival (1983–2001); these we combined into models to evaluate demographic vigor (lambda [λ]). We explored the influence of an array of individual, temporal, and spatial covariates on demographic vigor.

We identified an important relationship between λ and where a bear resides within the GYE. This potential for a source–sink dynamic in the GYE, coupled with concerns for managing sustainable mortality, reshaped our thinking about how management agencies might approach long-term conservation of the species. Consequently, we assessed the current spatial dynamic of the GYE grizzly bear population. Throughout, we followed the information-theoretic approach. We developed suites of a priori models that included individual, temporal, and spatial covariates that potentially affected reproduction and survival. We selected our best approximating models using Akaike's information criterion (AIC)

So, what happened to allow this population to grow and recover?

- Science and monitoring information was directly **translated into management action** and intensively applied to the Yellowstone grizzly population and its habitat
  - This was made possible by the structure of the IGBC with close connections and feedback from monitoring and research into management action

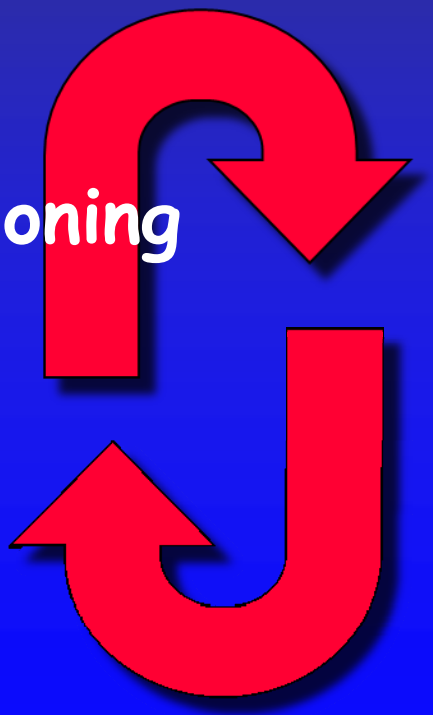
The interagency IGBC system provided application of adaptive management

- An Adaptive Management plan includes three critical elements:
- 1. Conceptual and quantitative models that make explicit the current understanding of the system, the underlying hypotheses driving management, and key uncertainties;
- 2. Rigorous monitoring plans focused on reducing the most critical uncertainties and clearly evaluating progress towards management goals; and
- 3. A scientifically defensible plan for monitoring and research including **rapid action on research results and feedback from management outcomes to revised management decisions.**

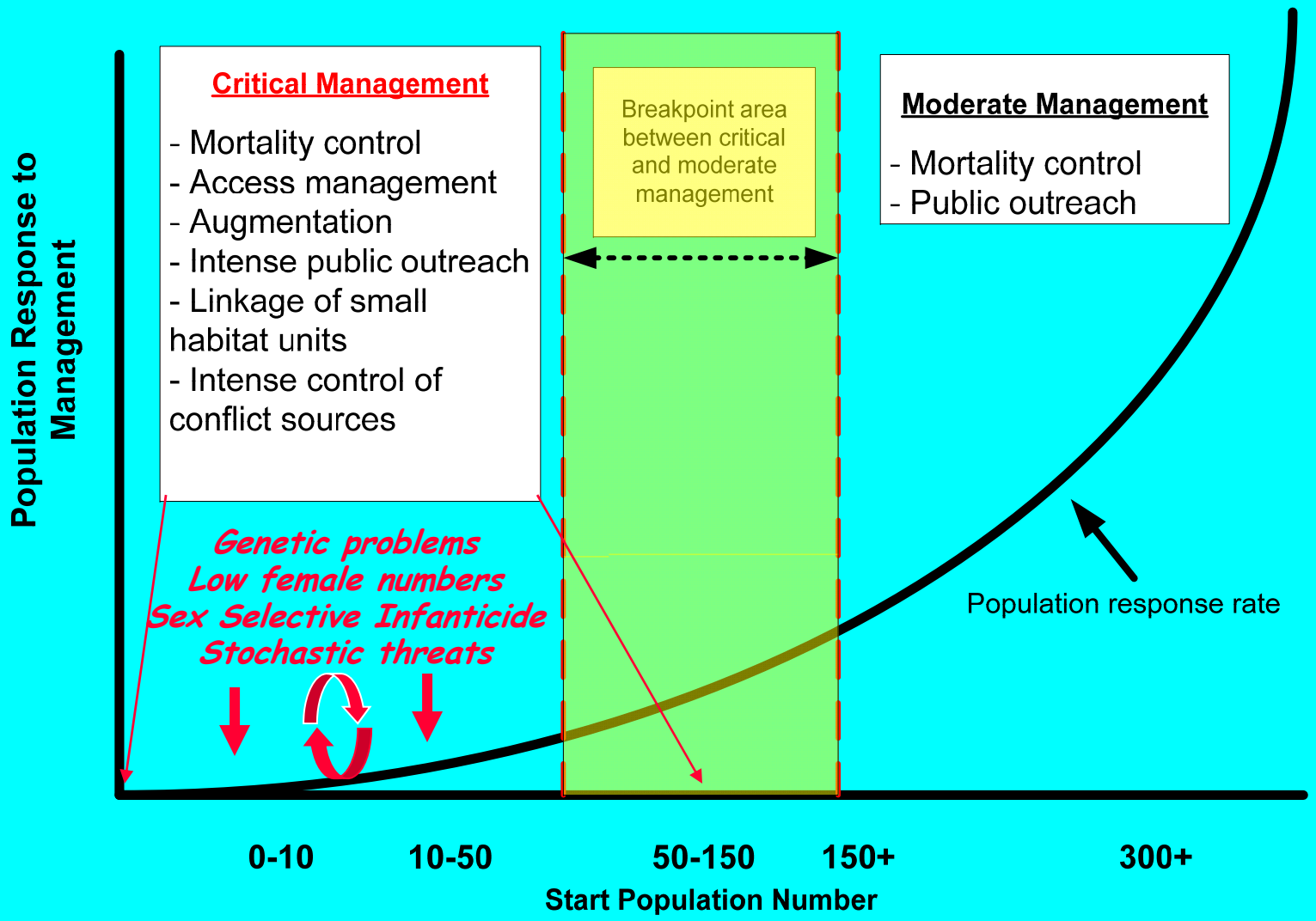
- A scientifically defensible plan for monitoring and research including **rapid action on research results and feedback from management outcomes to revised management decisions.**

The Challenges of Small Population Size:

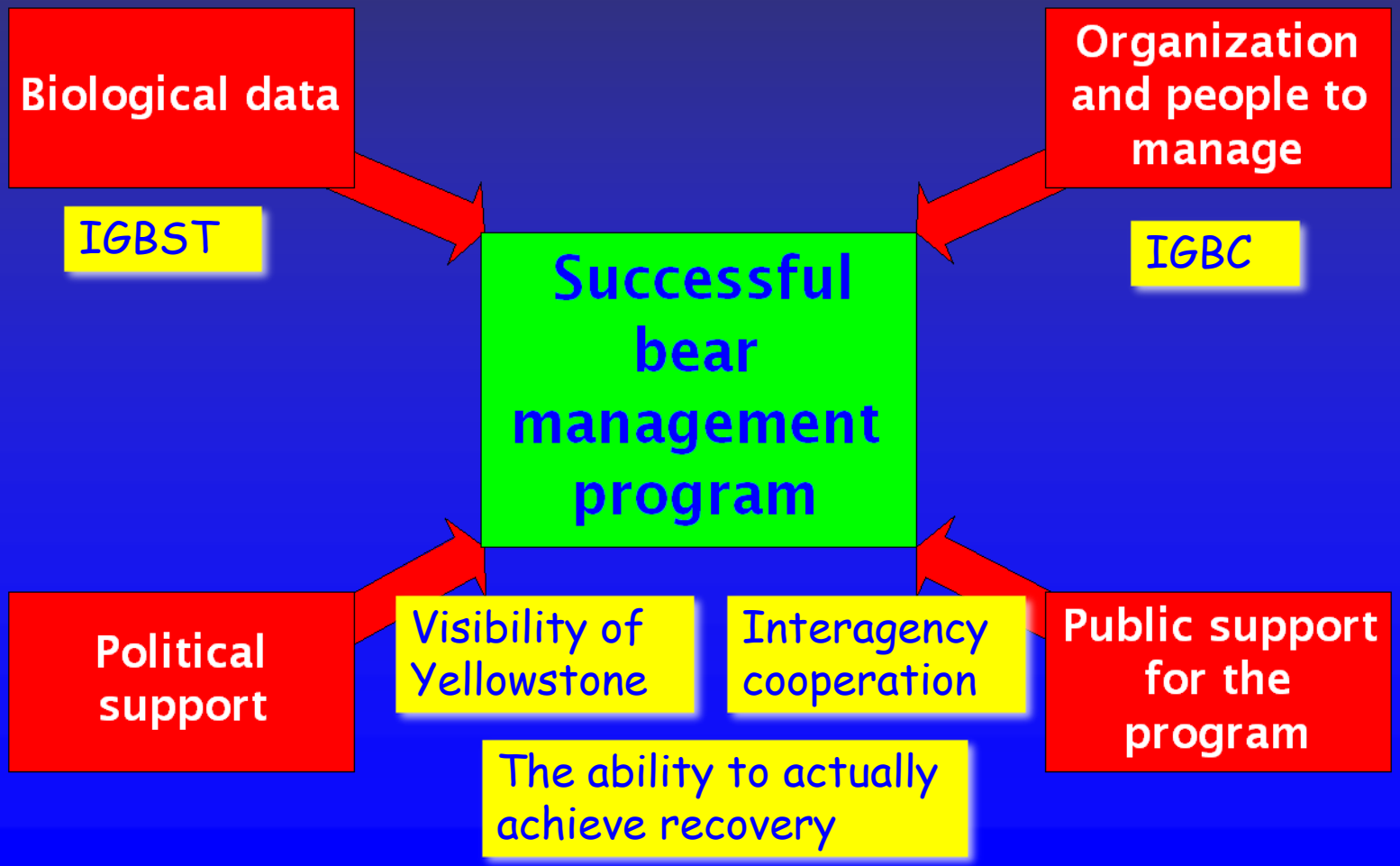
- The spiraling impact of multiple factors:
  - Habitat loss
  - Human-caused mortality
  - Habitat fragmentation
  - Habituation and food conditioning
  - Slow reproduction



All effects intensified when populations are smaller


Critical Management
- Mortality control
- Access management
- Augmentation
- Intense public outreach
- Linkage of small habitat units
- Intense control of conflict sources
Breakpoint area between critical and moderate management
Moderate Management
- Mortality control
- Public outreach
Genetic problems
Low female numbers
Sex Selective Infanticide
Stochastic threats
Population response rate
Population Response to Management
0-10
10-50
50-150
150+
300+
Start Population Number

Successful Bear Management Requires 4 Things:



Overall objective:

Assure a healthy and secure grizzly bear population in each ecosystem

How to achieve this objective:

- Develop strong and scientifically credible information on population demographics monitoring
- Develop strong and scientifically credible habitat management that will assure the habitat necessary to maintain a healthy and secure population
- Implement and apply a comprehensive adaptive management plan that all agencies agree to implement

Population Demographics

Develop strong and scientifically credible population information:

Assure that the demographic management and monitoring are scientifically sound and conservative to assure population health:

1. Develop multiple population monitoring indices to assure sensitivity of the monitoring system
2. Be conservative with all assumptions to minimize overestimation risk
3. Develop detailed and conservative limits on mortality to assure that mortality is within sustainable limits
4. Use the expertise of the best quantitative experts available in the development and critical review of these demographic management and monitoring systems

Use strong and scientifically credible information on the status of populations

Charles C. Schwartz
Interagency Grizzly Bear Study Team
Forestry Sciences Lab
Montana State University
Bozeman, MT 59717
406-994-5043; FAX 406-994-6416, E-mail chuck_schwartz@usgs.gov

TEMPORAL, SPATIAL, AND ENVIRONMENTAL INFLUENCES ON THE DEMOGRAPHICS OF THE YELLOWSTONE GRIZZLY BEAR

CHARLES C. SCHWARTZ, MARK A. HAROLDSON, GARY C. WHITE, RICHARD B. HARRIS, STEVE CHERRY, KIM A. KEATING, DAVE MOODY, and CHRISTOPHER SERVHEEN

Abstract: During the past 2 decades the grizzly bear (*Ursus arctos*) population in the Greater Yellowstone Ecosystem (GYE) has increased in abundance and expanded its range. Understanding the temporal, environmental, and spatial variables responsible for this change is useful in evaluating what likely influenced grizzly bear demographics in the GYE, and where future management efforts might focus both in this ecosystem and elsewhere where bear populations are threatened. We used recent data (1983–2002) obtained from radio-marked bears to generate estimates of reproduction and survival that we combined into models to evaluate demographic vigor (i.e., lambda [λ]). We explored the influence of an array of individual, temporal, and spatial covariates on demographic vigor. During our investigations we identified an important relationship between λ and where a bear resides within the GYE. This potential for a source sink dynamic within the GYE, when coupled with concerns for managing sustainable mortality, has reshaped our thinking about how management agencies might approach issues of long-term conservation of the species. Consequently, we included an assessment of the current spatial dynamic of the GYE grizzly bear population. Throughout, we followed the Information Theoretic Approach.

Use strong and scientifically credible information on how to manage mortality within sustainable limits

A Reconsideration Of Methods To Estimate Population Size And Sustainable Mortality Rates For Grizzly Bears In The Greater Yellowstone Ecosystem

Status of the Habitat

Develop strong and scientifically credible habitat criteria:

Relate demographic health to habitat values:

1. The basic assumption: Human activities are the prime factors limiting grizzly bear populations and determining population size and increase.
2. If the population is healthy and increasing, describe the habitat values and levels of human activity on the landscape during this time of increase. (Conversely, if the population is not healthy, there needs to be habitat management changes with monitoring demonstrating demographic response.)
3. Select a year within this healthy period and establish levels of human activity then as the baseline values.
4. Develop a management system to assure that human activities do not increase beyond those baseline values.

Adequate Regulatory Mechanisms

Develop a comprehensive and adaptive MANAGEMENT PLAN that all agencies agree to implement

FINAL CONSERVATION STRATEGY FOR THE GRIZZLY BEAR IN THE YELLOWSTONE ECOSYSTEM

Developed by the Interagency Conservation Strategy Team
March 2007

We are moving forward to assure the long term future for grizzly bears

What did it take to achieve success?

- Political commitment – leaders had to decide that this was something that they could support and then do so

- Science and monitoring - to tell us what was happening and highlight what needed to be done. Invest in the best science!

- Adaptive management – apply the science to management decisions and change management in response to monitoring data as necessary

What did it take to achieve success?

- Build public support – understand the interests of the public and build on those. Recognize that there will be user groups that do not agree with decisions. Slow steady, progress will achieve results. Rapid changes are rare.

- Emphasize successes – this helps people and agencies realize that the investments of time and trouble are paying off. It also results in more partners – everyone wants to be on a winning team.

What are the Problems with Achieving Grizzly Recovery?

- Grizzly bear recovery is basically a social issue, not a biological issue
- We know what we need to do. The question is will we be allowed to do what is necessary?
- The big impediments are political agendas at the expense of grizzly bears
- We need to listen to the public and respond with credible answers to their concerns

The Future of Grizzly Recovery

- The recovery effort will require increased support from local people
- Local support will require addressing the economic and public safety fears associated with grizzly bears
- Local support will depend on support from local officials
- Recovery will require compromise by all parties to achieve an acceptable approach


CAUTION!
BEARS ARE DANGEROUS!
DO NOT APPROACH!
UP TO $5000 FINE
FOREST SERVICE SPECIAL ORDER # 97-007

Remember: Partnerships are essential for success.

If you are working mostly with people who agree with you, you are wasting your time.

Take Home Messages

- Public and political support determine the success of management.
- Political commitment is necessary to make tough management decisions and to achieve long-term success. Grizzly recovery is a long-term process.
- If any of the key management actions are inhibited by public or political resistance, chances for success are reduced.

Take Home Messages

- Mortality control is dependent on public and political support
- Just telling people not to kill bears is not enough – they need to have a reason to do so – then bear conservation becomes state policy

Take Home Messages

- Providing bears habitat security is the key to increasing their resiliency.
- Established uses are difficult to change but such changes are necessary if grizzlies are to be recovered.

Take Home Message

- If some grizzly populations are allowed to disappear, it will not happen because we did not know what to do to help them.

- It will happen because the public and political pressures did not allow us as managers to do what we could have done to save them . . .


It's Their World Too…

Thank you